

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A pneumatic actuator in the form of a cantilever, the pneumatic actuator comprising: ~~characterised in that~~

an airtight and elongated hollow body ~~(1) of comprising~~ a flexible material and ~~operable to be pressurised with a compressed fluid air by means of~~ at least one valve; ~~(6) is present,~~

at least one compression member ~~(2) is present,~~ the compression member disposed ~~and the latter lies~~ along a surface line of the hollow body ~~(1) adjacent to the~~ latter and is secured against displacement and buckling, the surface line disposed generally parallel to a major axis of the hollow body; ~~furthermore that~~

at least one pair of tension elements ~~(4) is present,~~ the at least one pair of tension elements disposed on ~~which are laid pairwise in an opposite sides of sense of rotation~~ around the hollow body ~~(1) in a helical fashion;~~

~~and that wherein~~ a first end of the pneumatic actuator is connected to a reference system ~~(8)~~ and a second end ~~(17)~~ of the pneumatic actuator is operable to ~~can~~ perform a movement ~~and/or or~~ exert a force relative to the reference system proportional to ~~(8) depending on the pressurisation of the hollow body; and (1) with compressed air.~~

wherein depressurization of the hollow body results in approximately linear deflection of the compression member.

2. (Currently Amended) The pneumatic actuator according to claim 1, wherein: ~~characterised in that~~

a first end of the compression member is connected at one end to the a reference system; ~~(8);~~

furthermore the at least one pair of tension elements (4) are fixed at a first end ~~on the one hand to a~~ second free end of the compression member; ~~(2);~~

for which purpose the compression member comprising (2) has a node (3) at the second free end;

wherein the node is operable for the mutual friction-locked fixing of the compression member (2) and the at least one pair of tension elements; (4) and so as to take-up load forces;

whereby, furthermore, the at least one pair of tension elements (4) are is disposed laid around the hollow body (1) in a helical and counter eountra-rotational fashion with a half revolution envolution and, on the other hand, are is connected at a second end for its part in a friction-locked manner to a first fixing point (9), the first fixing point connected in a friction-locked manner to the reference system; and (8);

whereby the first fixing point (9) and the compression member (2) lie in a the plane of motion of the pneumatic actuator.

3. (Currently Amended) The pneumatic actuator according to claim 2, wherein:
characterised in that

the first end of the compression member (2) is clamped at one end in a friction-locked manner by means of a connection piece; (10)

the connection piece is connected in a friction-locked manner to the reference system; (8);

the an axial direction of the first end of the compression member (2) clamped in the connection piece (10) remains essentially unchanged even under loading of the node; and (3);

the compression member comprises a (2) is produced from flexible, flexurally elastic material and is bent under loading of the node (3).

4. (Currently Amended) The pneumatic actuator according to claim 2, wherein:
characterised in that

the compression member (2) is rotationally connected in a rotary and friction-locked manner to the reference system (8) by means of a hinge; (7);

the a rotary axis of the hinge (7) stands at right angles both to an the axial direction of the compression member (2) and to a the connecting line of the hinge (7) to the first fixing point; and (9);

the compression member comprises a (2) ~~is produced from~~ flexurally stiff material.

5. (Currently Amended) The pneumatic actuator according to claim ~~any one of claims 1 to 4, wherein~~ characterised in that the pneumatic actuator is reset from an the activated position into a the deactivated position by ~~means of~~ a spring element (11).

6. (Currently Amended) The pneumatic actuator according to claim ~~any one of claims 1 to 4, wherein~~ characterised in that the pneumatic actuator comprises: has a second further fixing point (9) to the reference system (8) in a the plane formed by the compression member (2) and the first fixing point; (9) ~~and has in addition~~ a second hollow body; ~~and (1) as well as at least one further~~ a second pair of tension elements (4), ~~allowing as a result of which the two~~ extreme positions of the pneumatic actuator regulating path to be ~~can~~ actively be occupied by the pneumatic actuator.

7. (Currently Amended) The pneumatic actuator according to claim 1, wherein: characterised in that

the compression member comprises a (2) ~~is produced from~~ flexurally elastic material;

the at least one pair of tension elements (4) are disposed ~~laid~~ around the hollow body (1) in a whole turn or in multiples of a whole turn; ~~and~~;

the at least one pair of tension elements (4) are is fixed in a friction-locked manner ~~respectively to first and second ends~~ the two ends of the compression member (2).

8. (Currently Amended) The pneumatic actuator according to claim 7, wherein characterised in that the compression member (2) is connected to the reference system (8) partially in a friction-locked manner at the first end of the pneumatic actuator.

9. (Currently Amended) The pneumatic actuator according to claim ~~any one of claims 1 to 8~~, wherein: characterised in that means are present for pressurisation of
the hollow body is operable to be pressurized (+) with the compressed fluid; air
and
the hollow body is operable for blowing the compressed fluid air out of the
hollow body (+).

10. (Currently Amended) ~~The Use of a~~ pneumatic actuator according to claim ~~any one of claims 1, to 9~~ wherein the pneumatic actuator is operable for use as a damping spring element.

11. (Currently Amended) ~~The Use of at least two~~ pneumatic ~~actuator~~ actuators according to claim ~~any one of claims 1, to 9~~ wherein at least two pneumatic actuators are operable for use as a gripping device.

12. (Currently Amended) ~~The Use of a~~ pneumatic actuator according to claim ~~any one of claims 1, to 9~~ wherein the pneumatic actuator is operable for use as a cantilever with constant pressurisation of the hollow body.

13. (Currently Amended) ~~The Use of a~~ pneumatic actuator according to claim ~~any one of claims 1, to 9~~ wherein the pneumatic actuator is operable for use in ~~for the~~ production of a pneumatically driven belt server.

14. (New) A pneumatic actuator, the pneumatic actuator comprising:

an airtight and elongated hollow body operable to be pressurised with a compressed fluid by at least one valve;

at least one compression member, the compression member disposed along a surface line of the hollow body and secured against displacement and buckling, the surface line disposed generally parallel to a major axis of the hollow body;

at least one pair of tension elements, the at least one pair of tension elements are disposed around the hollow body in a helical and counter-rotational fashion with a half revolution, the at least one pair of tension elements are connected at a first end to a second end of the compression member in a friction-locked manner to a fixing point;

wherein a first end of the pneumatic actuator is connected to a reference system and a second end of the pneumatic actuator is operable to perform a movement or exert a force relative to the reference system proportional to pressurization of the hollow body;

wherein the fixing point is connected in a friction-locked manner to the reference system; and

wherein the fixing point and the compression member lie in a plane of motion of the pneumatic actuator.

15. (New) The pneumatic actuator according to claim 14, wherein:

the first end of the compression member is clamped in a friction-locked manner by a connection piece;

the connection piece is connected in a friction-locked manner to the reference system;

an axial direction of the first end of the compression member clamped in the connection piece remains essentially unchanged under loading of the node; and

the compression member comprises flexible, flexurally elastic material and is bent under loading of the node.

16. (New) The pneumatic actuator according to claim 14, wherein:

the compression member is rotationally connected in a friction-locked manner to the reference system by a hinge;

a rotary axis of the hinge stands at right angles both to an axial direction of the compression member and to a connecting line of the hinge to the fixing point; and
the compression member comprises a flexurally stiff material.

17. (New) The pneumatic actuator according to claim 14, wherein the pneumatic actuator is reset from an activated position into a deactivated position by a spring element.

18. (New) The pneumatic actuator according to claim 14, wherein the pneumatic actuator comprises:

a second fixing point to the reference system in a plane formed by the compression member and the fixing point;

a second hollow body; and

a second pair of tension elements, wherein the second pair of tension elements are operable to allow two extreme positions of the pneumatic actuator regulating path to be actively occupied by the pneumatic actuator.